Claims

1. A lifting device for use in the manufacture of a tube-in-tube assembly comprising:

a first lift surface on said lifting device for supporting the axial end of a first vertically oriented tubular body;

a support structure on said lifting device for connecting said lifting device through said first tubular body to a vertical hoist mechanism; and

a second lift surface on said lifting device for supporting the axial end of a second vertically oriented tubular body while said first tubular body is disposed centrally within said second tubular body, said second lift surface being selectively receivable centrally within said second tubular body for axial movement through said second tubular body.

2. A lifting device as defined in Claim 1 wherein said first and second lift surfaces are spaced axially on said lifting device to support the axial ends of said first and second tubular bodies at a selected axial spacing for the manufacture of said tube-in-tube assembly.

3. A lifting device as defined in Claim 1 wherein said second lift surface is carried on radially extendable legs.

4. A lifting device as defined in Claim 3 wherein said radially extendable legs are biased radially outwardly whereby said legs automatically move radially outwardly when said the legs are not received within said second tubular body.

5. A lifting device as defined in Claim 4 wherein said second lifting surface automatically engages the axial end of said second tubular body when said lifting device is moved axially through said second tubular body after said legs are moved radially outwardly whereby said inner and outer tubular bodies may be simultaneously supported from their axial ends as said lifting device is moved vertically.

6. A lifting device as defined in Claim 1, further comprising a centralizing radially outer surface on said lifting device dimensioned to engage an internal cylindrical surface of said second tubular body for centralizing said first tubular body within said second tubular body.

7. A lifting device as defined in Claim 1 wherein:

said first and second lift surfaces are spaced axially on said lifting device to support the axial ends of said first and second tubular bodies at a selected axial spacing for the manufacture of said tube-in-tube assembly;

said second lift surface is carried on radially extendable legs;

said radially extendable legs are resiliently biased radially outwardly whereby said legs automatically move radially outwardly when said legs are not received within said second tubular body;

said second lifting surface automatically engages the axial end of said second tubular body when said lifting device is moved axially through said second tubular body after said legs move radially outwardly whereby said inner and outer tubular bodies may be simultaneously supported from their axial ends as said lifting device is moved vertically; and

said lifting device includes a centralizing, radially outer surface dimensioned to engage an internal cylindrical surface of said second tubular body for centralizing said first tubular body within said second tubular body.

8. A centralizing ring for spacing an inner tube annularly from a surrounding outer tube comprising:

a curving external surface contour on said ring for forming a line contact with a cylindrical surface in said inner or outer tube; and

radially recessed areas in said external surface contour circumferentially spaced about said ring for circumferentially disrupting said line contact whereby heat transfer between said inner and outer tube is reduced.

9. A centralizing ring as defined in Claim 8 wherein said external surface contour is carried on the radially outer surface of said ring.

10. A centralizing ring as defined in Claim 9 wherein said ring includes a circumferential gap whereby said ring can be diametrically expanded for assembly onto an inner tube.

11. A method of manufacturing tube-in-tube assemblies comprising the steps of:

applying centralizing rings to a first tubular body;

connecting a lifting device to said first tubular body;

supporting said first tubular body with said lifting device;

vertically orienting said first tubular body with a second, larger diameter, tubular body;

vertically moving said first tubular body centrally through said second tubular body to form a tube-in-tube assembly with an annular spacing between said first and second tubular bodies;

supporting said second tubular body with said lifting device; and

vertically moving said lifting device to simultaneously move said tubular bodies of said tube-in-tube assembly.

12. A method as defined in Claim 11, further comprising the steps of:

disposing said tube-in-tube assembly substantially horizontally; and

securing said first and second tubular bodies together.

13. A method as defined in Claim 11, further comprising the step of spacing said inner and outer tubular bodies axially by vertically moving said lifting device.

14. A method as defined in Claim 11, further comprising the steps of:

applying insulation material about the external surface of said first tubular body; and

welding said inner tubular body to said outer tubular body to seal said annular spacing.

15. A method as defined in Claim 14, further comprising the steps of providing a curving external contour surface on said centralizing rings for forming a line contact engagement between said first and second tubular bodies.

16. A method as defined in Claim 15, further comprising the step of recessing said contour surface for interrupting said line contact engagement to reduce heat transfer between said first and second tubular bodies.

17. A method as defined in Claim 16, further comprising the step of circumferentially displacing said recessed areas in separate centralizing rings for reducing heat transfer between said first and second tubular bodies.

18. A method as defined in Claim 11, further comprising the step of centralizing said first tubular body within said second tubular body with said lifting device.

19. A method as defined in Claim 11, further comprising the steps of:
extending a lift connector from said lifting device through said first tubular body; and
vertically moving said lifting device by vertically moving said lift connector.

20. A method as defined in Claim 11, further comprising the steps of:
vertically orienting said second tubular body; and

lowering said second tubular body vertically into a recessed work area.

21. A method as defined in Claim 12, further comprising the steps of:

applying insulation material about the external surface of said first tubular body;

vertically orienting said second tubular body;

lowering said second tubular body vertically into a recessed work area;

spacing said inner and outer tubular bodies axially by vertically moving said lifting device;

welding said inner tubular body to said outer tubular body to seal said annular spacing;

providing a curved external contour surface on said centralizing rings for forming a line contact engagement between said first and second tubular bodies;

recessing said contour surface for interrupting said line contact engagement to reduce heat transfer between said first and second tubular bodies;

circumferentially displacing said recessed areas in separate centralizing rings for reducing heat transfer between said first and second tubular bodies;

centralizing said first tubular body within said second tubular body with said lifting device;

extending a lift connector from said lifting device through said first tubular body; and

vertically moving said lift device by vertically moving said lift connector.